

**STOCKPILE
REPORT
to the
CONGRESS**

JANUARY - JUNE 1970

**OFFICE OF EMERGENCY PREPAREDNESS
EXECUTIVE OFFICE OF THE PRESIDENT
WASHINGTON, D.C. 20504**

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WASHINGTON, D.C. 20504

OFFICE OF THE DIRECTOR

October 22, 1970

Honorable Spiro T. Agnew
President of the Senate

Honorable John W. McCormack
Speaker of the House of Representatives

Sirs:

Pursuant to Section 4 of the Strategic and Critical Materials Stock Piling Act, Public Law 520, 79th Congress, there is presented herewith the semiannual report to the Congress on the strategic and critical materials stockpiling program for the period January 1 to June 30, 1970.

A statistical supplement to this report was transmitted to you on September 14, 1970.

Sincerely,

G. A. Lincoln
G. A. Lincoln
Director

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INTRODUCTION

Presidential Executive Order 11051 authorizes the Director of OEP to determine what materials are strategic and critical, and to set the quality and quantities of such materials which are to be stockpiled.

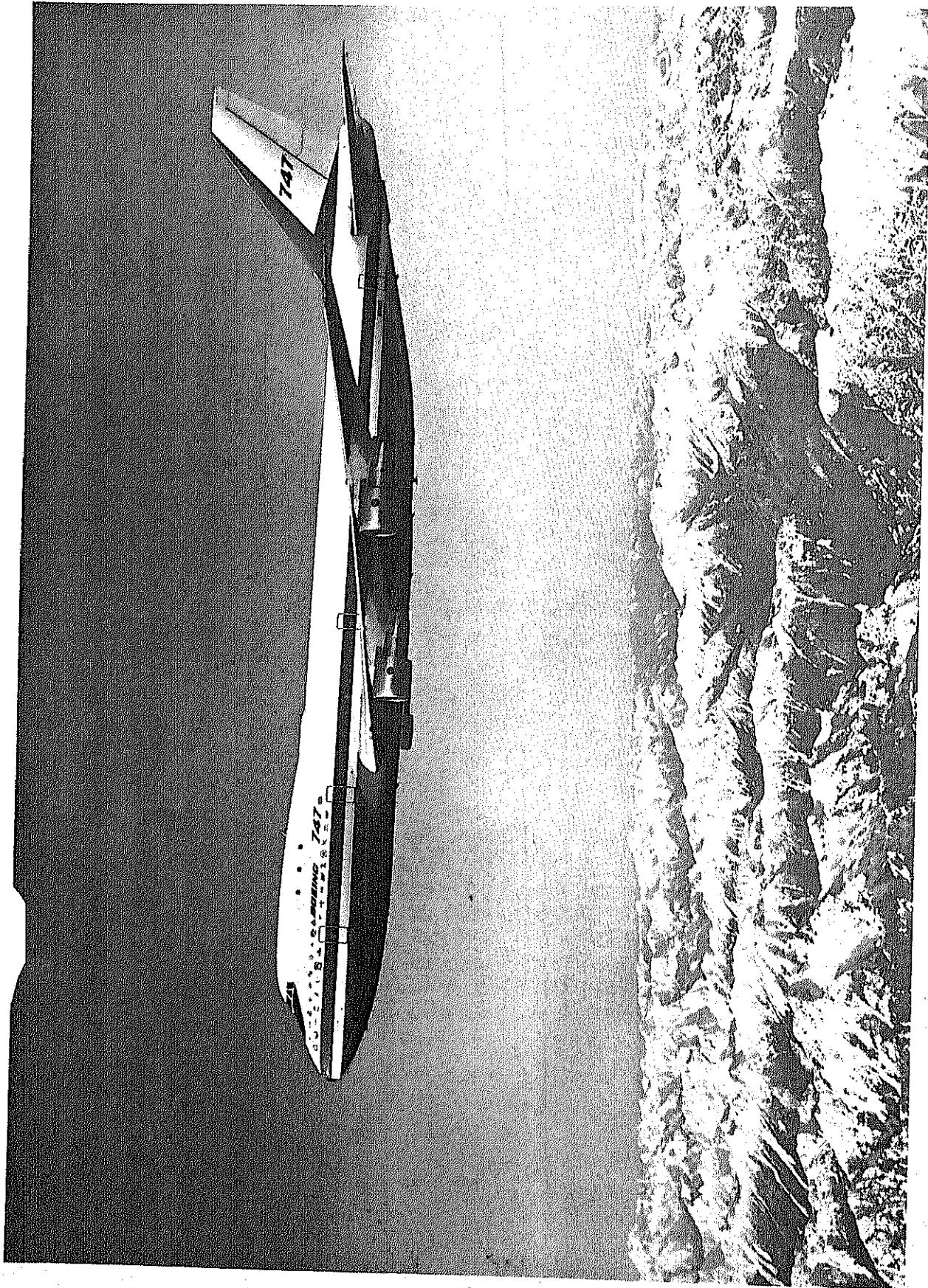
Based on guidance set by the Director, present policy requires that the stockpiles contain, as exactly as can be determined, sufficient quantities of material of the necessary qualities to meet possible national security needs. Quantities of materials in excess of these needs are scheduled to be disposed of in an orderly way and in accordance with the provisions of the laws governing such disposals, i.e., the protection of producers, processors, and consumers from avoidable disruption of their usual markets, and the protection of the Government from avoidable loss.

Stockpile policy has been and will continue to be reviewed to assure its consistency with national security plans. Such review of policy will from time to time lead to changes in existing guidance. The most recent change occurred with a February decision to terminate general discounting of estimated quantities of supply that could be produced by domestic facilities in a period of emergency, when those domestic facilities are so concentrated that loss of one facility will greatly reduce

production. This production discount had originally been introduced as a safety factor against possible destruction by sabotage. A review of experience in World War II and two limited wars, and an analysis of the threat for the 1970's, did not provide a basis for its continued use.

As the year ended, a broad review of stockpile policy designed to bring policy into line with the latest changes in security planning was underway. A major review has been in order since the basic authority for the stockpile program dates back to 1946 and the international situations have significantly changed since that time. This extensive review will attempt to update the stockpile program to the projected needs of 1970's, and may lead to proposals for changes in existing stockpile legislation.

Changes are made in procedures as well as policy. This report, and the statistical supplement, represent the first reports prepared where dollar figures are given only for stored material that belongs to the Government. All previous reports have been prepared on a physically on-hand basis, and have included material sold but unshipped. The use of such figures had presented a misleading indication of the value of the Government's stockpile asset.



Boeing 747 superjet in flight. The age of the superjet has increased the demands for strong light-weight materials to serve the needs of mankind.

SUPPLY-REQUIREMENTS STUDIES

Material usage patterns must be regularly monitored in order to assure that the current and future emergency needs for strategic and critical materials are reflected in current stockpile planning. To accomplish this, OEP obtains reports from other agencies, of use patterns for materials, in quantitative and qualitative terms. When reviews of these reports indicate that the status of a particular material has substantially changed or is likely to change in the future, new supply-requirements analyses are initiated. Material reviews are made in accordance with current national security guidance. Reviews cover a wide range of critical materials and are not limited to materials currently held in the stockpile.

One major stockpile guidance change was made during the reporting period. This was the decision to eliminate general discounting of production facilities in the U.S. and Canada because of concentration. This principle was introduced into stockpile objective planning in 1954 by an administrative action of the Director of the Office of Defense Mobilization (now the Office of Emergency Preparedness). Experience in World War II and two limited wars, however, does not provide a basis for such discounts. It was applied, initially, to cover loss of any domestic production facility which supplied more than 20 percent of the U.S. emergency supply. In 1963, the percentage was increased to 25 percent. In 1966, the application criterion was changed so that no concentration discounting was to be applied in supply esti-

mates if alternate production facilities existed. On February 7, 1970, the general use of concentration discounting was discontinued.

On February 25, 1970, a task force was formally established in OEP to modernize stockpile analyses, management, and related activities. In accomplishing these goals, the computer will be used more extensively in inventory management and in the process of calculating objectives. New economic models are also being evaluated. When the task force has completed its work, OEP expects to be able to make quick rough-cut supply-requirements analyses of selected materials. This capability will open new areas of materials policy analysis, including cost-benefit relationships of alternative programs for assuring material availabilities.

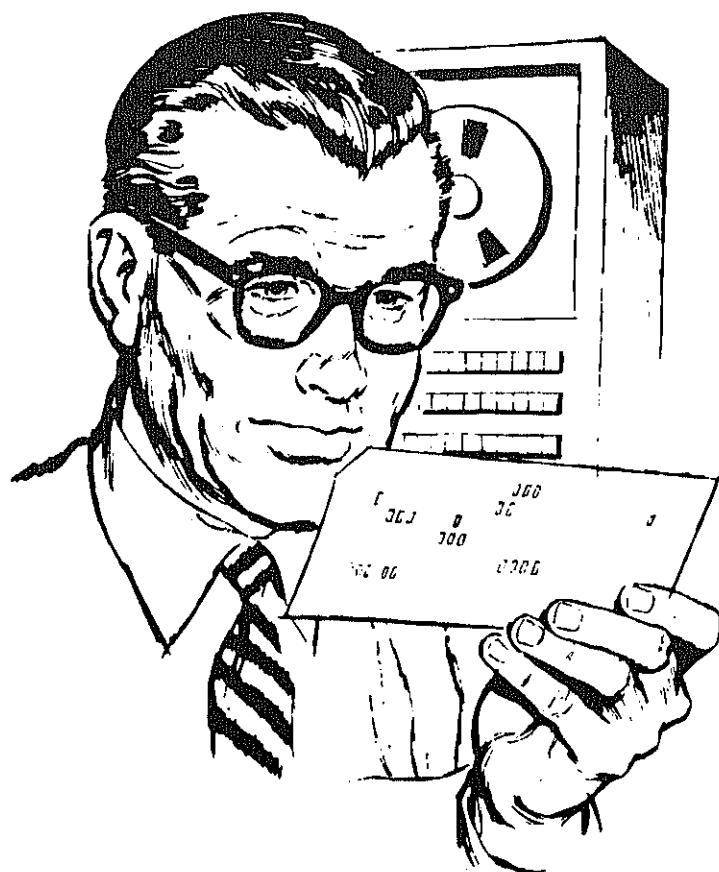
Conventional War. Conventional war stockpile objectives are based on a 3-year war estimated to begin not less than one nor more than 2 years in the future. To determine the size and scope of the war effort, OEP projects the gross national product and its various components through the intervening years prior to the outbreak of the war and then through each of the three war years. Data on planned military strengths and military programs and requirements are obtained from the Department of Defense.

In late 1969, OEP began a complete review of the stockpile objectives for all materials that had been designated strategic and critical. This review was continued through January-June 1970.

Determinations on 26 materials in the stockpile were completed during January-June 1970. Of this total, 16 determinations were made for basic materials and 10 on subobjectives for upgraded forms of stockpiled materials. One objective was increased, while 10 objectives were decreased. *Celestite*, *kyanite-mullite*, *magnesium*, *rare earths*, and *selenium* were removed from the List of Strategic and Critical Materials for Stockpiling. In the

case of the 10 subobjectives established for the upgraded forms of materials, one was increased, eight were decreased, and one - *tungsten crystalline carbide powder* - was removed from the List. The new and old levels of these objectives are indicated below.

Reviews of other stockpiled materials were being continued as of the end of the report period.



CONVENTIONAL-WAR STOCKPILE OBJECTIVES

Material	Unit	New Objective	Old Objective
Antimony	ST	40,700	50,500
Celestite	ST	(Removed from list)	23,750
Chromite, Metallurgical	SDT	<u>3,100,000</u>	<u>3,650,000</u>
Chromite Metallurgical Ore	SDT	2,910,537	3,117,440
Chromium, Ferro, High Carbon ...	ST-E (gw)ST	176,250 (70,500)	317,500 (127,000)
Chromium, Ferro, Low Carbon	ST-E (gw)ST	0 (0)	135,000 (54,000)
Chromium, Ferro, Silicon	ST-E (gw)ST	0 (0)	58,500 (39,000)
Chromium, Metal, Electrolytic	ST-E (gw)ST	13,213 (3,775)	21,560 (6,160)
Chromite, Refractory	SDT	368,000	400,000
Cordage Fibers, Abaca	LB	25,000,000	50,000,000
Cordage Fibers, Sisal	LB	100,000,000	200,000,000
Diamond, Industrial: Bort	KT	23,700,000	24,700,000
Kyanite-Mullite	SDT	(Removed from list)	4,800
Magnesium	ST	(Removed from list)	78,000
Rare Earths	ST	(Removed from list)	6,500
Rubber	LT	200,000	385,000
Selenium	LB	(Removed from list)	475,000
Shellac	LB	1,000,000	3,900,000
Silver	fine TrOz	139,500,000	165,000,000
Tungsten	LB	<u>60,000,000</u>	<u>44,000,000</u>
Tungsten Ore	LB	55,655,500	35,785,000
Tungsten Carbide Powder	LB-E (gw)LB	2,289,500 (1,900,000)	2,410,000 (2,000,000)
Tungsten, Ferro	LB-E (gw)LB	0 (0)	1,960,000 (1,800,000)
Tungsten Metal Powder, Hydrogen Reduced	LB-E (gw)LB	1,410,000 (1,200,000)	1,880,000 (1,600,000)

CONVENTIONAL-WAR STOCKPILE OBJECTIVES (Continued)

Material	Unit	New Objective	Old Objective
Tungsten Metal Powder, Carbon Reduced	LB-E (gw)LB	645,000 (547,000)	590,000 (500,000)
Tungsten Crystalline Carbide	LB-E (gw)LB	(Removed from list)	1,375,000 (1,100,000)
Vanadium	ST	<u>540</u>	<u>2,100</u>
Vanadium, Ferro	ST	0	1,200
Vanadium Pentoxide	ST	540	900

E - Ore Equivalent

gw - Gross Weight

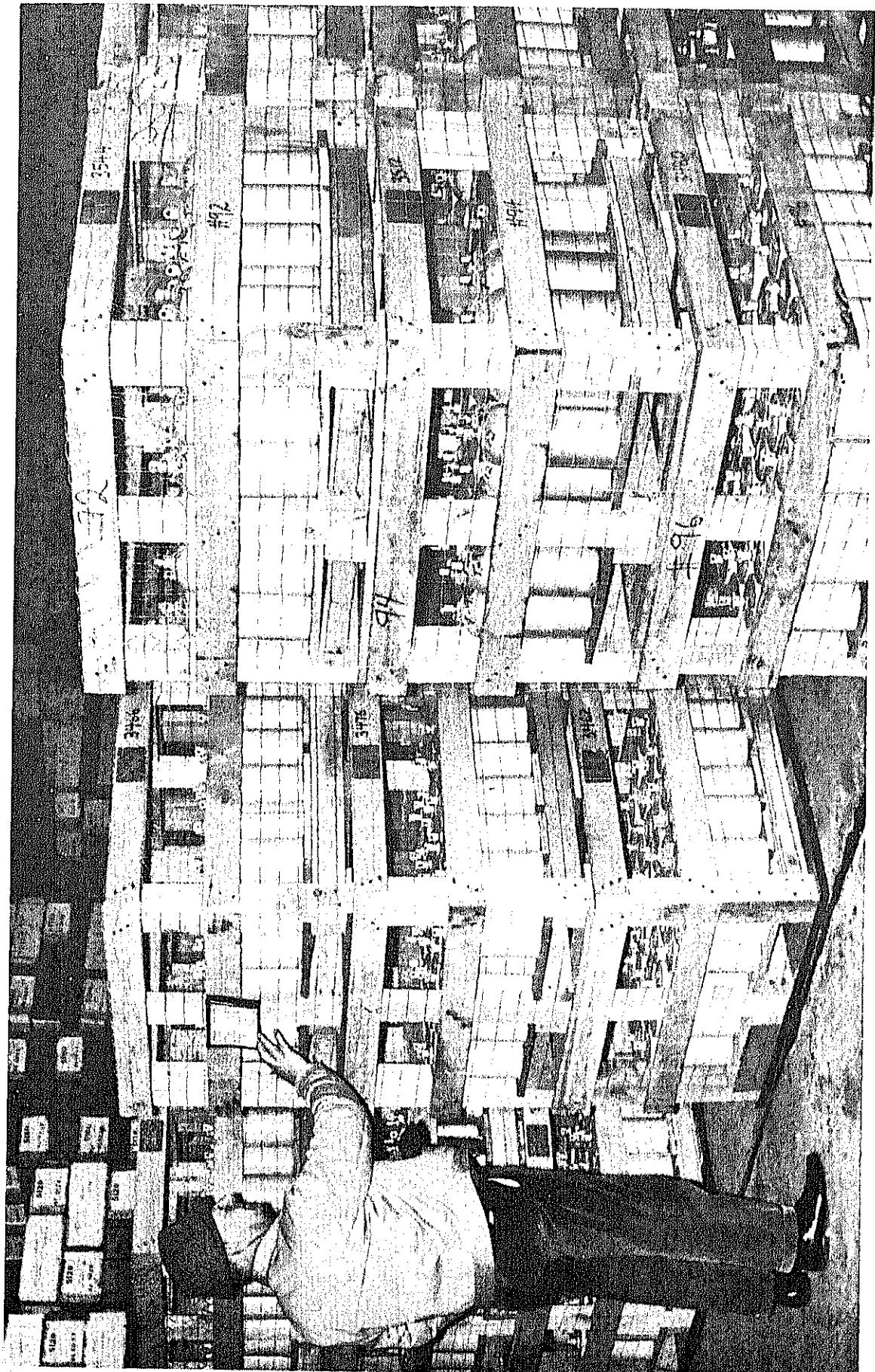
LB - Pounds

LT - Long Tons

SDT - Short Dry Tons

ST - Short Tons

TrOz - Troy Ounces



Security check of mercury stored in box pallets at storage site.

SUMMARY OF GOVERNMENT INVENTORIES OF STRATEGIC AND CRITICAL MATERIALS

As of June 30, 1970, the estimated value of strategic materials held in Government inventories amounted to \$7.2 billion. These Government inventories included materials considered excess to stockpile needs which were valued at approximately \$2.7 billion at estimated market value. Over 76 percent of the market value of these excesses was made up of 13 materials: *aluminum, metallurgical grade bauxite (Jamaica and Surinam), metallurgical grade chromite (upgraded forms and subspecification ores), cobalt, industrial diamond bort and stones, lead, metallurgical grade manganese, quartz crystals, rubber, tin, tungsten and zinc.*

The following table is a summary of the total value of all materials carried in

Government inventories, including those with quantities in excess of established stockpile objectives as of June 30, 1970. It indicates the acquisition cost and estimated current market value of materials meeting stockpile objectives, and also those materials which are excess to stockpile needs. The market values shown have not been adjusted for normal premiums and discounts relating to contained qualities, or for materials handling costs that would be related to movement of material at disposal. The market values listed do not, therefore, reflect the exact revenue that would be realized at time of sale.



**SUMMARY OF GOVERNMENT INVENTORIES OF
STRATEGIC AND CRITICAL MATERIALS**
June 30, 1970

	Acquisition Cost	Market Value
A. I. Inventories Reserved for Objectives		\$4,490,397,500
II. Uncommitted Excess Inventories		2,690,169,000
Total		\$7,180,566,500
B. I. Total Inventories in Storage		
National Stockpile	\$4,281,145,300	\$5,222,217,500
Supplemental Stockpile	1,440,762,000	1,623,744,800
Defense Production Act	748,355,800	474,659,700
Commodity Credit Corp.	66,700	64,400
Total on Hand	6,470,329,800	7,320,686,400
II. Inventories Within Objective		
Total	3,594,197,200	4,490,397,500
III. Excess Inventories in Storage		
Total	2,876,132,600	2,830,288,900

Market values are computed from prices at which similar materials are being traded; or, in the absence of current trading, at an estimate of the price which would prevail in commercial markets. Market values are unadjusted for normal premiums and discounts relating to contained qualities, or for inherent materials handling allowances. *Market values do not necessarily reflect the amount that would be realized at time of sale.*

The Uncommitted Excess excludes the unshipped sales; the Inventories in Storage include quantities that have been sold but not shipped.

Source: General Services Administration

STATUS OF STOCKPILE OBJECTIVES

The bar chart below shows the estimated market value of the objectives established and the extent to which materials on hand in all Government inventories (National Stockpile, Supplemental Stock-

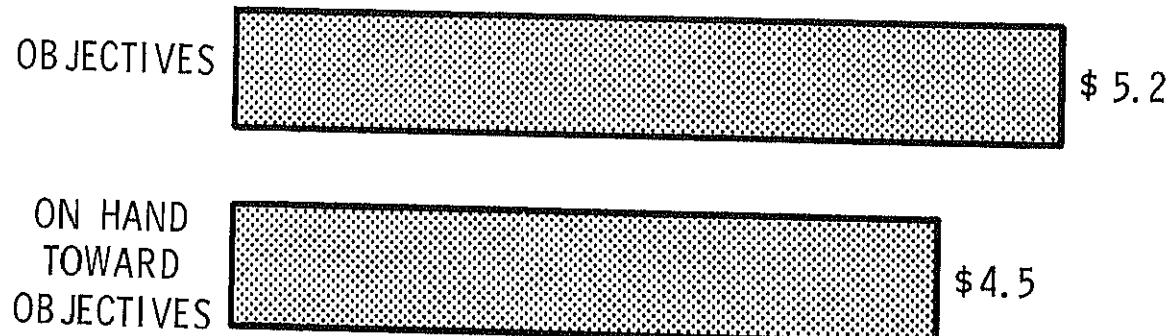
pile, DPA, and CCC) meet these objectives. The figures do not include the quantities on hand in all Government inventories which were in excess of stockpile objectives (\$2.7 billion).

STATUS OF STOCKPILE OBJECTIVES

AS OF JUNE 30, 1970

(In Billions of Dollars)

Market Value



The objective, inventory, excess, and balance of disposal authorizations, for each material on the Strategic and Critical Materials List, are shown in the following summary. As of June 30, 1970, total quantities of stockpile grade materials on hand and on order for all Government-owned inventories were in excess or equal to the stockpile objectives for 59 of the 71 basic materials on the List of Strategic and Critical Materials for Stockpiling. Acquisition efforts on 11 of the 12 commodities in deficit have been held up pending completion of the extensive review of stockpile policy. Cash purchases of jewel bearings from the Government's plant at Rolla, North Dakota, have continued.

In addition to specification grade materials, Government inventories contain some nonspecification grades not credited

to stockpile objectives. Much of the non-specification grade materials in the National Stockpile was acquired by the transfer of Government-owned surpluses to the stockpile after World War II. Several were of specification grade when acquired but no longer qualify due to changes in industry practices and other technological advances.

Disposal balances shown in the following summary represent Congressional authorizations for sales of excess materials in the National and Supplemental Stockpiles or, in the case of DPA materials, sales approved by the Director, OEP. Planning is continuing for the disposal of all remaining excesses. Inventory changes during the report period were due primarily to disposals or to reclassification, upgrading, and other adjustments in the inventories.



**SUMMARY OF GOVERNMENT INVENTORIES, OBJECTIVES,
EXCESSES AND BALANCE OF DISPOSAL AUTHORIZATIONS**

**Basic Stockpile Materials
As of June 30, 1970**

(Market Value - \$ Millions)

Commodity	Unit	Objective	Total Inventory ¹	Market Value ²	Uncommitted Excess	Market Value ²	Balance of Disposal Authorization
1. Aluminum	ST	450,000	1,281,542	\$743.3	831,542	\$482.3	831,542 ³
2. Aluminum Oxide, Fused	ST	300,000	428,554	70.5	128,554	18.2	128,554
3. Antimony	ST	40,700	46,736	165.0	6,036 ⁴	21.7	0
4. Asbestos, Amosite	ST	40,000	61,556	13.0	21,556 ⁵	4.6	10,317
5. Asbestos, Chrysotile	ST	13,700	14,092	6.3	3,149 ⁶	0.5	305
6. Bauxite, Metal, Jamaica	LDT	5,000,000	8,858,881	146.2	3,858,881 ⁷	63.7	714,000
7. Bauxite, Metal, Surinam	LDT	5,300,000	7,889,967	134.1	2,589,967 ⁶	44.0	0
8. Bauxite, Refractory	LCT	173,000	173,000	7.6	0	0	0
9. Beryl	ST	28,000	41,149	80.0	13,149 ⁷	27.6	3,259
10. Bismuth	LB	2,100,000	2,608,168	15.6	508,168 ⁶	3.0	208,168
11. Cadmium	LB	6,000,000	10,159,109	40.6	4,159,109 ⁶	16.6	0
12. Castor Oil	LB	50,000,000	68,450,753	11.8	18,450,753 ⁶	2.7	0
13. Chromite, Chemical	SDT	260,000	1,186,747	34.3	926,747 ⁸	28.5	44,171
14. Chromite, Metallurgical	SDT	3,100,000	5,393,026	523.2	2,293,026 ⁴	172.1	980,264
15. Chromite, Refractory	SDT	368,000	1,226,931	39.3	858,931 ⁶	27.5	0
16. Cobalt	LB	38,200,000	78,388,728	172.5	40,188,728 ⁶	88.4	15,399
17. Columbium	LB	1,176,000	9,591,288	20.7	6,019,748 ⁴	11.3	1,210,103
18. Copper	ST	775,000	253,400	310.2	0	0	0
19. Cordage Fibers, Abaca	LB	25,000,000	83,480,340	19.6	58,480,340 ⁴	13.7	33,568,705
20. Cordage Fibers, Sisal	LB	100,000,000	199,990,955	17.4	99,990,955 ⁴	8.7	0
21. Diamond Dies, Small	PC	25,000	23,081	0.9	0	0	0
22. Diamond, Industrial Bort	KT	23,700,000	42,611,479	101.4	18,911,479 ⁹	42.6	0
23. Diamond, Industrial Stones	KT	20,000,000	26,730,386	362.7	6,730,386 ¹⁰	92.2	1,769,650
24. Feathers and Down	LB	3,000,000	3,000,000	11.4	0	0	0
25. Fluorspar, Acid Grade	SDT	540,000	1,102,692	69.2	212,692 ⁶ ¹¹	12.9	0
26. Fluorspar, Metallurgical	SDT	850,000	411,788	18.9	0	0	0
27. Graphite, Natural, Ceylon	ST	5,500	5,886	1.1	386 ⁶	0.1	0
8. Graphite, Natural, Malagasy	ST	18,000	32,337	3.6	14,397	1.6	14,397
9. Graphite, Other	ST	2,800	2,800	0.6	0	0	0
0. Iodine	LB	8,000,000	8,011,839	10.4	11,839	0.02	0
31. Jewel Bearings	PC	57,500,000	58,035,208	18.8	535,208 ¹²	0.02	0
32. Lead	ST	530,000	1,143,824	377.5	613,824 ¹⁰	202.6	114,997
33. Manganese, Battery, Natural	SDT	135,000	308,839	29.1	173,839 ⁶	16.3	0
34. Manganese, Battery, Synthetic Dioxide	SDT	1,900	22,680	10.6	20,780 ⁵	9.7	15,975
35. Manganese Ore, Chemical A	SDT	35,000	146,914	10.3	111,914 ⁶	7.8	0

**SUMMARY OF GOVERNMENT INVENTORIES, OBJECTIVES,
EXCESSES AND BALANCE OF DISPOSAL AUTHORIZATIONS (Continued)**

**Basic Stockpile Materials
As of June 30, 1970**

(Market Value - \$ Millions)

Commodity	Unit	Objective	Total Inventory ¹	Market Value ²	Uncommitted Excess	Market Value ²	Balance of Disposal Authorization
36. Manganese Ore,							
Chemical B	SDT	35,000	100,838	\$ 5.0	65,838 ⁶	\$ 3.3	0
37. Manganese, Metallurgical	SDT	4,000,000	12,113,400	413.2	8,113,400 ⁵	234.5	2,507,740
38. Mercury	FL	126,500	200,090	85.0	73,590 ⁷	31.3	0
39. Mica, Muscovite Block							
St./better	LB	6,000,000	14,930,424	60.8	8,089,724 ¹³	20.5	6,849,662
40. Mica, Muscovite Film,							
1 & 2 quality	LB	2,000,000	1,468,982	17.0	57,507 ⁵	0.1	6,289
41. Mica, Muscovite Splittings	LB	19,000,000	43,652,136	52.4	24,652,136 ⁵	29.6	21,452,261
42. Mica, Phlogopite Block	LB	150,000	168,580	0.1	151,859	0.03	151,859
43. Mica, Phlogopite							
Splittings	LB	950,000	4,872,782	7.8	3,922,782 ⁵	6.3	3,572,961
44. Molybdenum	LB	36,500,000	42,802,263	77.5	6,302,263 ⁶	11.0	2,766,326
45. Nickel	ST	55,000	50,000 ¹⁴	128.0	0	0	0
46. Opium	AvLB	143,000	142,507	14.0	993	0.1	993
47. Platinum Group, Iridium	TrOz	17,000	17,256	2.7	256 ⁵	0.04	0
48. Platinum Group,							
Palladium	TrOz	1,300,000	1,185,239	43.9	0	0	0
49. Platinum Group,							
Platinum	TrOz	555,000	450,035	59.6	0	0	0
50. Pyrethrum	LB	25,000	63,375	0.6	38,375 ⁵	0.4	0
51. Quartz Crystals	LB	320,000	5,083,431	55.0	4,763,431 ⁵	51.2	4,433,431
52. Quinidine	OZ	2,000,000	1,800,377	3.8	0	0	0
53. Quinine	OZ	4,130,000	3,548,161	4.3	0	0	0
54. Rubber	LT	200,000	356,001	167.5	156,001	73.4	155,445
55. Rutile	SDT	100,000	56,525	10.5	0	0	0
56. Sapphire & Ruby	KT	18,000,000	16,305,502	0.2	0	0	0
57. Shellac	LB	1,000,000	8,417,960	3.1	7,417,960 ¹⁵	2.7	184,241
58. Silicon Carbide, Crude	ST	30,000	196,453	42.6	166,453 ⁵	36.1	0
59. Silver	(fine) TrOz	139,500,000	165,000,000	266.0	25,500,000 ¹⁶	41.1	0
60. Sperm Oil	LB	23,400,000	23,402,677	5.4	0	0	0
61. Talc, Steatite Block							
& Lump	ST	200	1,205	0.4	1,005	0.3	1,005
62. Tantalum	LB	3,400,000	3,213,097	32.0	118	0.002	0
63. Thorium Oxide	ST	40	40 ¹⁷	0.3 ¹⁷	0	0	0
64. Tin	LT	232,000	254,411	948.9	22,411	83.6	22,411
65. Titanium Sponge	ST	33,500	33,859	82.6	8,514	18.0	8,514
66. Tungsten	LB	60,000,000	141,482,084	460.3	81,482,084 ⁶	260.5	15,571,831

**SUMMARY OF GOVERNMENT INVENTORIES, OBJECTIVES,
EXCESSES AND BALANCE OF DISPOSAL AUTHORIZATIONS (Continued)**

Basic Stockpile Materials
As of June 30, 1970

(Market Value - \$ Millions)

Commodity	Unit	Objective	Total Inventory ¹	Market Value ²	Uncommitted Excess	Market Value ²	Balance of Disposal Authorization
67. Vanadium	ST		540	3,306	20.7	2,766 ⁴	17.5
68. Vegetable Tannin, Chestnut.....	LT		9,500	27,454	7.0	17,954 ⁵	4.5
69. Vegetable Tannin, Quebracho	LT		50,600	191,033	51.3	140,433 ⁵	37.7
70. Vegetable Tannin, Wattle.....	LT		9,500	35,806	8.2	26,306 ⁵	6.0
71. Zinc	ST		560,000	1,140,047	353.4	580,047 ¹⁰	179.8
							64,846

FOOTNOTES

¹Total inventory consists of stockpile and nonstockpile grades and reflects uncommitted balance.

²Market values are estimated from prices at which similar materials are being traded; or in the absence of trading data, at an estimate of the price which would prevail in the market. Prices used are unadjusted for normal premiums and discounts relating to contained qualities or normal freight allowances. *The market values do not necessarily reflect the amount that would be realized at time of sale.*

³Committed for sale but undelivered under long-term contracts.

⁴Balance of excess pending submission to the Congress at end of report period.

⁵Disposal planning on balance of excess currently underway.

⁶Balance of excess pending Congressional approval at end of report period. Legislation enacted July 10, 1970.

⁷Deferred due to market impact.

⁸Legislation covering 350,000 SDT pending submission to the Congress at end of report period. Disposal planning on balance of excess currently underway.

⁹Legislation covering 17.9 million carats pending Congressional approval. Disposal planning on balance of excess currently underway.

¹⁰Balance of excess pending Congressional approval.

¹¹Excludes 350,000 SDT credited to metallurgical fluorspar.

Factory inspecting feasibility of reworking bearings to meet stockpile specifications.

¹²Excludes 840,700 LBS credited to mica, muscovite film. Disposal planning on balance of excess currently underway.

¹³Includes approximately 10,000 short tons *loaned* from stockpile under Section 5 of the Strategic and Critical Materials Stock Piling Act.

¹⁴Legislation covering 4.3 million pounds enacted July 10, 1970. Disposal planning on balance of excess currently underway.

¹⁵Legislation pending to permit return to Treasury.

¹⁶Thorium nitrate credited as 40 ST thorium oxide, \$0.3 million market value.

ABBREVIATIONS

FL	-	Flask	OZ	-	Ounce
KT	-	Carat	PC	-	Piece
LB	-	Pound	SDT	-	Short Dry Ton
LCT	-	Long Calcined Ton	ST	-	Short Ton
LDT	-	Long Dry Ton	TrOz	-	Troy Ounce
LT	-	Long Ton			



Loading of excess rubber onto vessel at Navy-owned pier for low cost shipment to another U.S. port.

OTHER MATERIALS IN GOVERNMENT INVENTORIES

Inventories of materials that have been removed from the stockpile list, and

of other materials for which there are no stockpile objectives, are indicated in the table below. These inventories are not included in the previous tabulation.

SUMMARY OF GOVERNMENT INVENTORIES AND BALANCE OF DISPOSAL AUTHORIZATIONS COVERING MATERIALS FOR WHICH THERE ARE NO STOCKPILE OBJECTIVES

As of June 30, 1970

(Market Value - \$ Millions)

Commodity	Unit	Total Inventory ¹	Market Value	Balance of Disposal Authorization
Asbestos, Crocidolite	ST	39,912	\$ 7.4	39,912
Celestite	SDT	25,849 ²	.7	12,680
Corundum	ST	1,964 ³	0.1	0
Diamond Tools	PC	64,178 ⁴	0.8	0
Kyanite-Mullite	SDT	4,820 ²	.5	0
Magnesium	ST	103,860 ⁵	76.1	13,807
Mica, Muscovite Block, St. B/lower	LB	3,903,845	7.8	3,903,845
Mica, Muscovite Film, 3rd quality	LB	454,653	3.1	454,653
Rare Earths	SDT	13,521 ²	3.5	5,288
Selenium	LB	474,774 ²	3.8	0
Talc, Steatite Ground	ST	3,900	0.02	3,900
Thorium Nitrate	LB	3,661,397 ⁶	15.2	3,161,397
Zirconium Ore, Baddeleyite	SDT	16,514	1.0	16,514
Zirconium Ore, Zircon	SDT	1,720	0.002	1,720

¹ Inventory reflects uncommitted balance.

² Balance of excess pending submission to the Congress at end of report period.

³ Balance of excess pending Congressional approval at end of report period. Legislation enacted July 10, 1970.

⁴ Disposal planning currently underway.

⁵ Legislation covering 12,000 ST enacted July 10, 1970. Balance of excess pending submission to the Congress at end of report period.

⁶ Includes 80,000 pounds credited to thorium oxide objective, \$0.3 million market value. Disposal planning on balance of excess currently underway.

NATIONAL STOCKPILE ACTIVITIES

PROCUREMENT AND UPGRADING

The OEP Strategic Stockpile Procurement Directive for FY 1970, issued December 12, 1969, provided for cash procurement of 2 million pieces of jewel bearings from the Federal facility at Rolla, North Dakota, and the acquisition of seven commodities in exchange for excess materials.

With the exception of cash purchases of jewel bearings, further contracting for procurement and acquisition was suspended in January 1970. This action was taken to minimize budget impact and to avoid obtaining material which might be determined excess as the result of the extensive review of stockpile policy.

Procurement - Cash

Jewel Bearings. The Government-owned William Langer Jewel Bearing Plant, Rolla, North Dakota, which is operated by the Bulova Watch Company, Incorporated, continued to produce jewel bearings for the National Stockpile and for defense contractors.

A new 3 year management operating contract, which became effective January 1, 1970, has been entered into with Bulova Watch Company, Incorporated. The contract provides for the operation of the William Langer Jewel Bearing Plant at Rolla, North Dakota, in accordance with provisions of Public Law 90-469. Under the new arrangement, the plant operation is financed through a revolving fund. Bulova produces jewel bearings for sale at

fixed prices to Government agencies and their contractors and subcontractors, and to GSA for the National Stockpile, utilizing more effective and economically competitive business management methods than were possible under the previous method of operations.

The capabilities afforded under this new operation have enabled the plant to balance production. This should result in more economical use of labor and equipment, and in improved delivery times through the use of a shelf inventory, which heretofore could not be financed. It is expected that the results of these and other improvements will lead to a general sales price reduction within the next 6 months.

Procurement - Exchange

Palladium. The contract entered into on July 1, 1969, for furnishing 200,000 troy ounces of palladium was completed on June 15, 1970.

Quinidine Sulfate. The contract entered into on October 23, 1969, for furnishing 200,000 avoirdupois ounces of quinidine sulfate was completed on March 19, 1970.

Titanium Sponge. Under a contract entered into on July 1, 1969, for furnishing 4,000 short tons of titanium sponge, deliveries as of June 30, 1970, totaled 3,024 short tons. On March 19, 1970, the contract was amended to extend the final delivery date from June 30, 1970, to December 31, 1970.

A contract entered into on July 1, 1969, for 2,000 short tons of titanium sponge was completed on June 30, 1970.

Ferromanganese - Palladium. Under a contract entered into on August 31, 1967, for furnishing 200,000 troy ounces of palladium and the upgrading of manganese ore to 36,000 short tons of medium carbon ferromanganese, deliveries of palladium have been completed and through June 30, 1970, 23,092 short tons of ferromanganese were received. The processing of ferromanganese is continuing under the contract with final delivery to be made not later than June 30, 1971.

Platinum. Services are continuing under the contract entered into on March 17, 1969, for refining 200,000 troy ounces of Government-owned platinum and 4 troy ounces of iridium. Deliveries under the contract as of June 30, 1970, totaled 94,326 troy ounces. On February 6, 1970, the contract was amended to extend the final delivery date from April 17, 1970, to April 17, 1971.

Silicomanganese. Under a contract entered into on June 28, 1968, for the conversion of Government-furnished manganese ore to 45,500 short tons of silicomanganese, deliveries through June 30, 1970, totaled 23,574 short tons. Due to a revised supply-requirements situation, negotiations were underway at year end to terminate further deliveries under this contract.

Ferrocolumbium. Under the contract entered into on March 14, 1969, for furnishing Grade B ferrocolumbium containing 279,000 pounds of columbium, deliv-

eries as of June 30, 1970, totaled 92,954 pounds. Deliveries are to be completed by March 14, 1971.

Rutile. The contract entered into on July 1, 1969, for furnishing 5,600 short dry tons of rutile was completed on April 14, 1970.

DISPOSAL PROGRAM ACTIVITY

OEP has continued to place emphasis on programs to dispose of quantities of strategic and critical materials that had been determined to be excess to stockpiling needs. These programs were developed in consonance with the criteria set forth in the Stock Piling Act and the Defense Production Act for the disposal of surplus materials. During the report period, GSA submitted to the 91st Congress proposed legislation for the release of 12 commodities - *bauxite, bismuth, cobalt, diamond stones, fluorspar, graphite, lead, magnesium, manganese, mercury, molybdenum, and zinc*. Proposed disposal legislation on 12 additional commodities was awaiting submission to the Congress at year end.

SALES COMMITMENTS

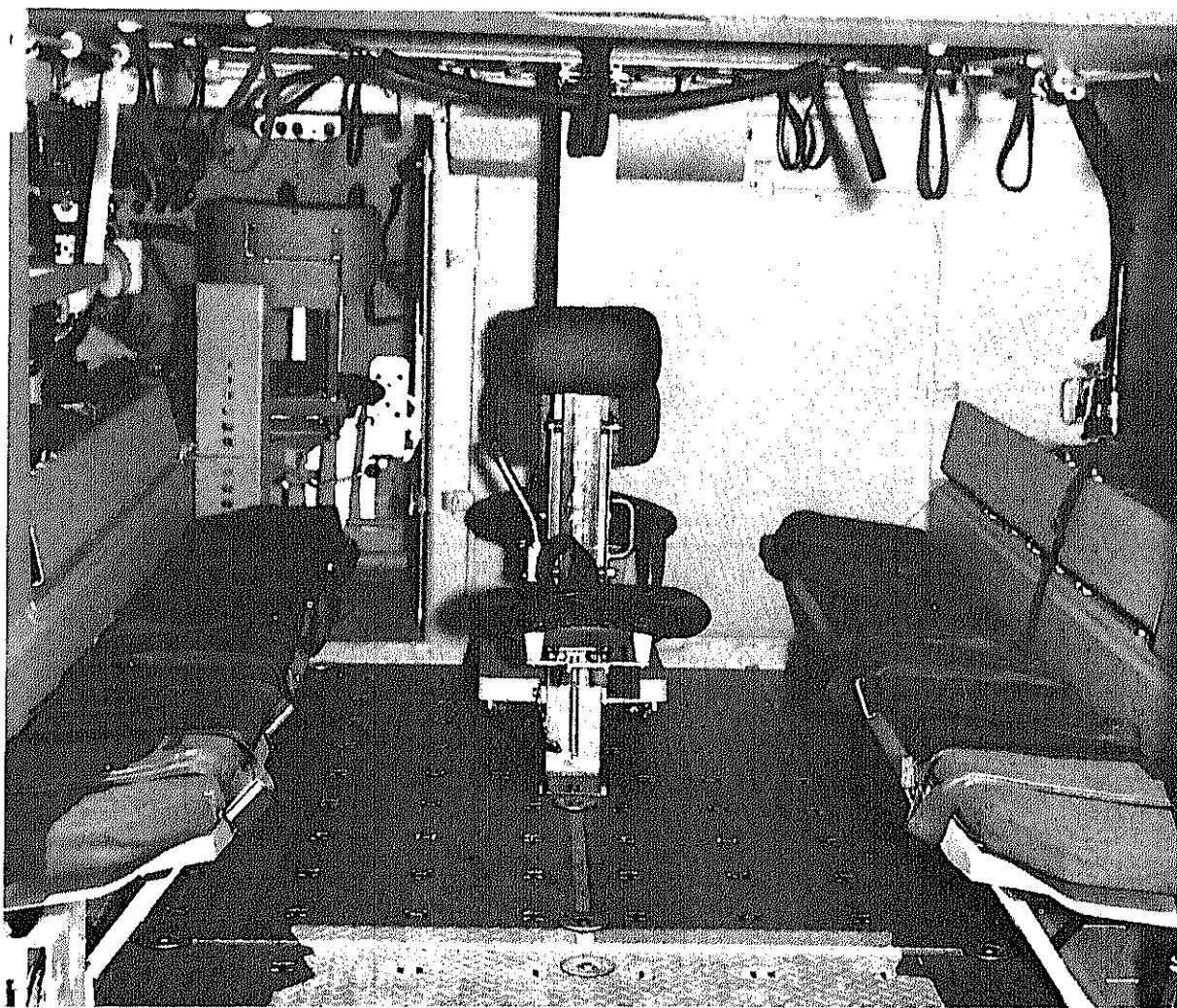
Disposal sales during the period totaled \$92.0 million - a decrease of \$100.4 million from the \$192.4 million realized during the previous 6 months. Of the total \$92.0 million, \$56.6 million were from the National and Supplemental Stockpiles, \$18.0 million from the Defense Production Act inventory, and \$17.4 million from other sales (primarily silver not included in stockpile inventories).

Approximately 85 percent (\$78.5 million) of total disposals for the period were made up by nine materials - *aluminum*, \$10.5 million; *cobalt*, \$5.2 million; *magnesium*, \$7.2 million; *molybdenum*, \$5.8 million; *rubber*, \$6.6 million; *silver*, \$16.6 million; *tin*, \$5.1 million; *tungsten*, \$12.2 million; and *vanadium*, \$9.3 million.

Cumulative sales since the inception of the disposal program in 1958 total ap-

proximately \$3.4 billion. (Figures 1 and 2, page 20).

The commodities and quantities of each material making up the total sales for January-June are listed in the table which follows on page 21.



This M-113 Armored Personnel Carrier is made from magnesium floor plates and aluminum, again emphasizing the requirements for strong light-weight materials.

Figure 1

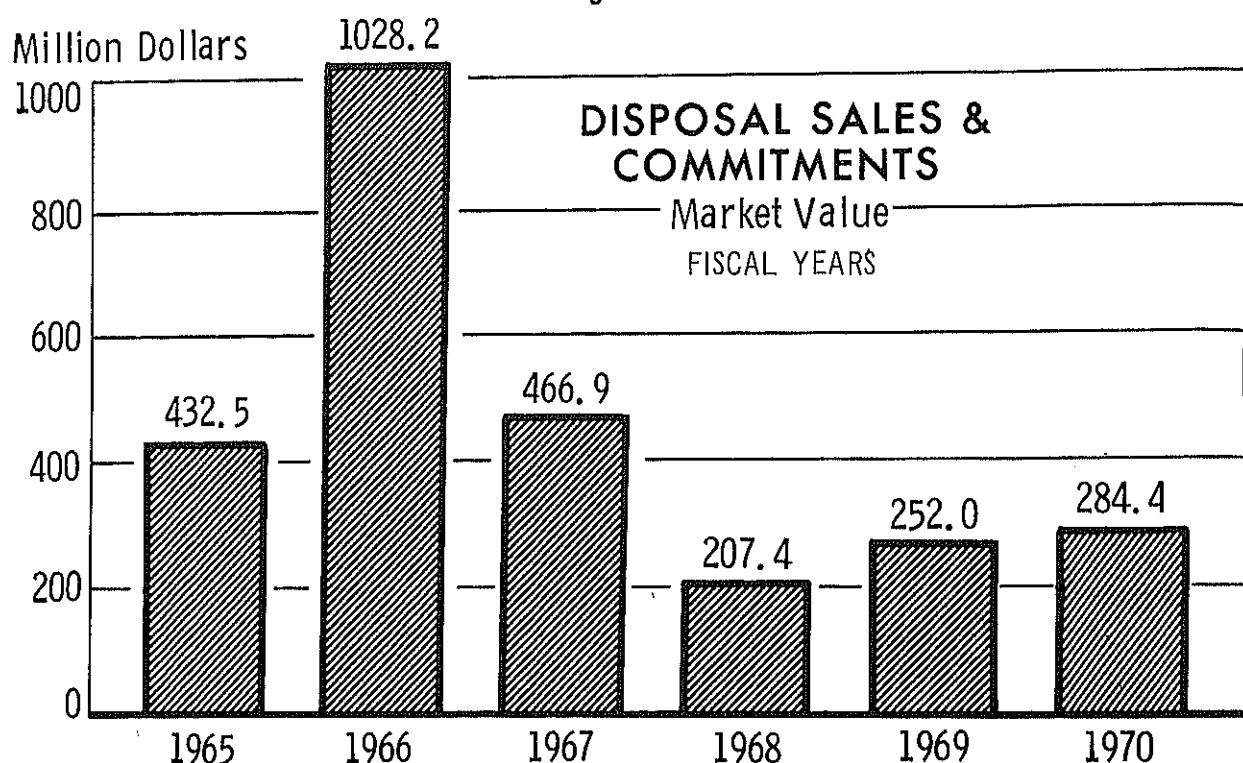
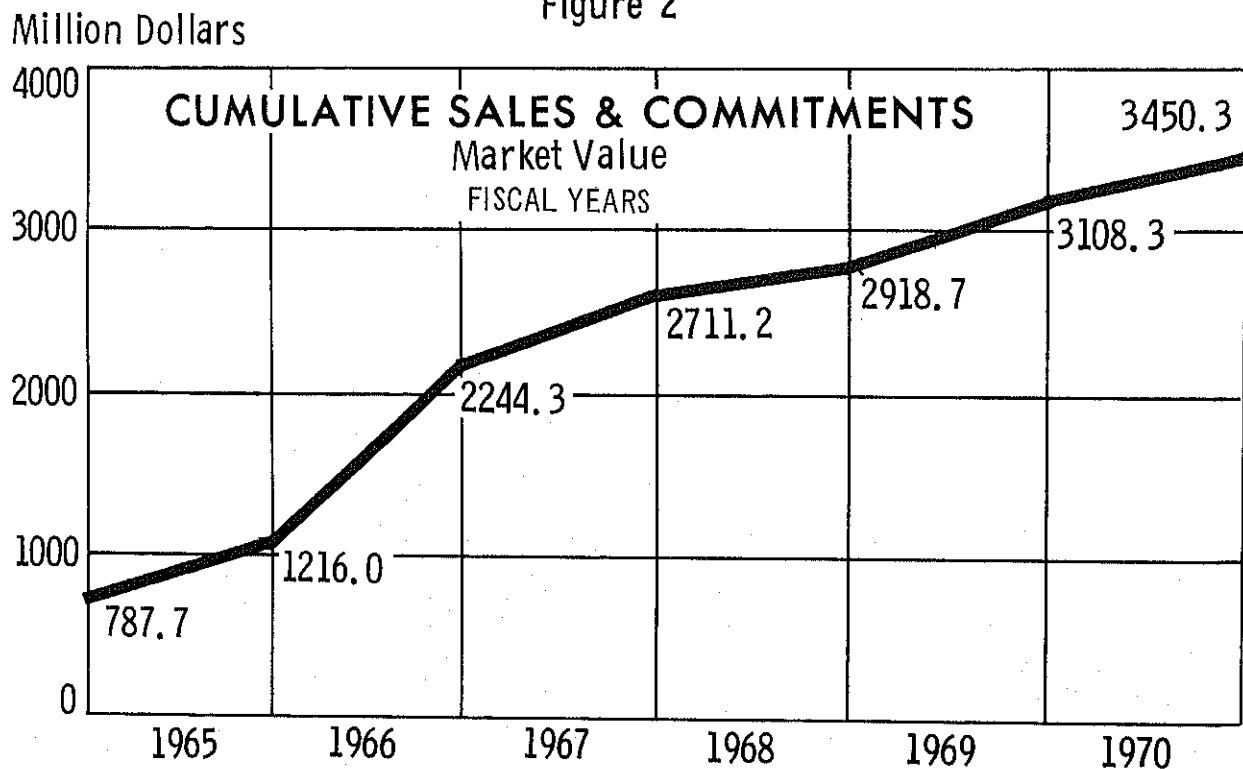


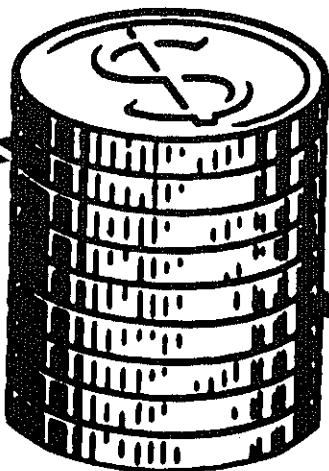
Figure 2



DISPOSALS OF STRATEGIC AND CRITICAL MATERIALS

January - June 1970

Material	Unit	Quantity	Sales Commitments		
			Government Use	Industrial Use	Total Sales Value
NATIONAL AND SUPPLEMENTAL STOCKPILE INVENTORIES:					
Aluminum	ST	17,145	\$	\$ 9,617,589	\$ 9,617,589
Asbestos, Amosite	ST	440		78,340	78,340
Asbestos, Crocidolite	ST	5,464		1,019,184	1,019,184
Beryl	ST	1,481		643,980	643,980
Bismuth	LB	268,818	3,630	1,859,865	1,863,495
Chromite, Chemical	SDT	66,967		857,612	857,612
Cordage Fibers, Abaca	LB	14,990,409	210,301	2,635,707	2,846,008
Lead	ST	5,427	1,477,356	33,723	1,511,079
Magnesium	ST	11,296		7,194,512	7,194,512
Manganese, Metallurgical	SDT	11,421		208,255	208,255
Mica	LB	36,837		67,724	67,724
Molybdenum	LB	3,250,155		5,756,999	5,756,999
Nickel	LB		3,551,158		3,551,158
Quartz Crystals	LB	65,326		256,433	256,433
Rubber	LT	14,000	6,551,517		6,551,517
Shellac	LB	-158,206		66,475	66,475
Talc	ST	26		4,358	4,358
Thorium	LB	5,000		9,650	9,650
Tin	LT	1,290	5,065,610		5,065,610
Vanadium	ST	1,604		9,254,362	9,254,362
Vegetable Tannins:					
Quebracho	LT	200	46,480		46,480
Wattle	LT	645	123,990		123,990
Zinc	ST	13		4,025	4,025
Total National and Supplemental Stockpiles			\$17,030,042	\$39,568,793	\$56,598,835



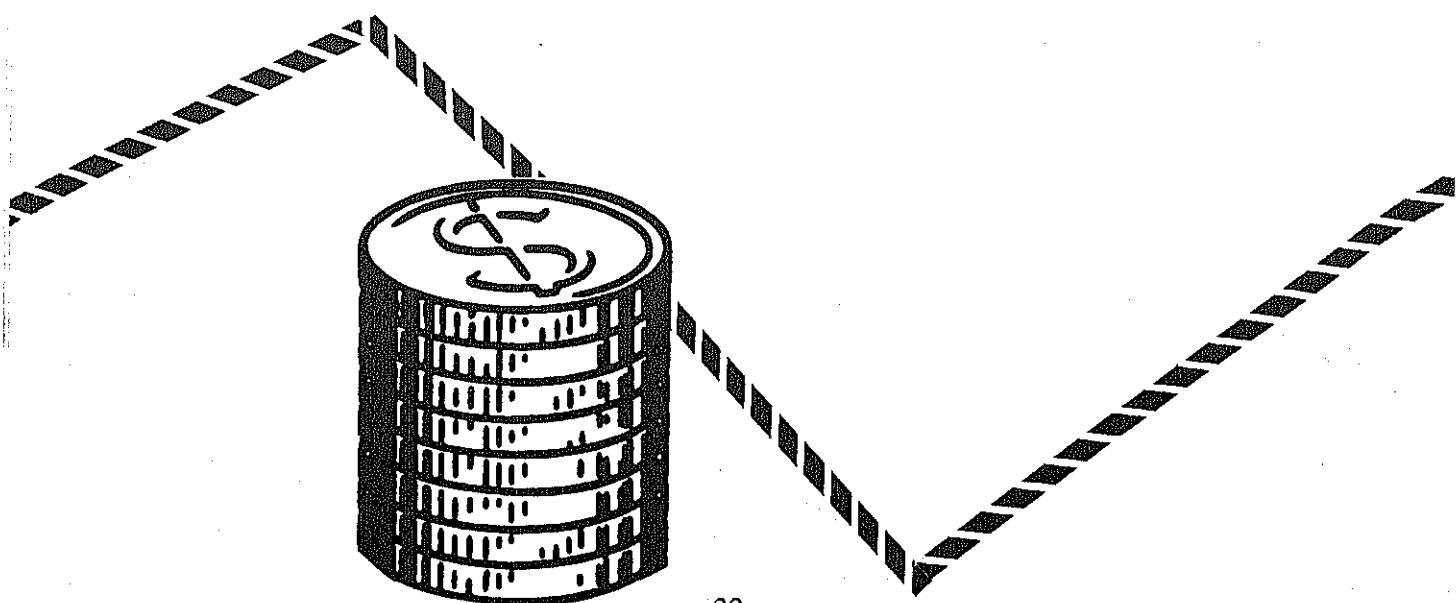
DISPOSALS OF STRATEGIC AND CRITICAL MATERIALS (Continued)

January - June 1970

Material	Unit	Quantity	Sales Commitments		
			Government Use	Industrial Use	Total Sales Value
DEFENSE PRODUCTION ACT INVENTORY:					
Aluminum	ST	1,527	\$ 75,086	\$ 856,913	\$ 856,913
Cobalt	LB	2,350,330		5,104,593	5,179,679
Columbium	LB	346,133		671,400	671,400
Manganese, Metallurgical	SDT	2,700		30,879	30,879
Mica, Muscovite Block	LB	151,253		180,636	180,636
Titanium	ST	-536 ¹		-1,124,857 ¹	-1,124,857 ¹
Tungsten	LB	4,329,933	<u>166,715</u>	<u>12,056,634</u>	<u>12,223,349</u>
Total DPA			\$ 241,801	\$17,776,198	\$18,017,999
OTHER (Non-stockpile Inventories):					
Bauxite	LDT	110,000		\$ 500,000	\$ 500,000
Mercury	FL	701		316,095	316,095
Silver	Fine TrOz			<u>16,569,241²</u>	<u>16,569,241²</u>
Total OTHER				\$17,385,336	\$17,385,336
GRAND TOTAL		\$17,271,843		\$74,730,327	\$92,002,170

¹Negative sales figure represents adjustment of sales contract made in a previous report period.

²Represents that portion of the total proceeds in excess of the U.S. monetary value based on \$1.2929 per ounce.
Some 34,623,905 ounces of silver were sold at an average price of \$1.75 per ounce.



LEGISLATION RELATIVE TO STOCKPILE DISPOSAL

During January-June, a total of 22 disposal proposals, with an estimated market value of \$970.7 million, were considered by the Congress. Of these, 17 were enacted (on July 10, 1970), four were pending, and one, covering mercury, was withdrawn to avoid possible disruptive market impact.

At the close of the report period, 12 other disposal plans had completed execu-

tive branch clearance and were submitted to the Congress in early July. These bills had an estimated market value of \$274.1 million, and would bring to approximately \$1.2 billion the amount of disposal legislation proposed to the 91st Congress.

The status of stockpile disposal legislation, including those pending action, at the close of the report period is indicated in the following table:

STATUS OF STOCKPILE DISPOSAL LEGISLATION

Legislation Enacted

Material	Unit	Quantity	Market Value (\$Millions)	Public Law Number ¹
Asbestos, Chrysotile	ST	2,844	\$ 0.5	PL 91-329
Bauxite, Surinam	LT	2,600,000	44.0	PL 91-326
Bismuth	LB	300,000	1.8	PL 91-318
Cadmium	LB	4,180,000	16.6	PL 91-314
Castor Oil	LB	18,500,000	2.7	PL 91-319
Chromite, Refractory	SDT	826,900	12.6	PL 91-328
Cobalt	LB	40,200,000	88.4	PL 91-317
Corundum	ST	1,952	0.1	PL 91-330
Fluorspar, Acid Grade ...	SDT	212,637	12.9	PL 91-320
Graphite, Ceylon	ST	386	0.1	PL 91-327
Magnesium	ST	12,000	8.8	PL 91-321
Manganese, Battery Grade, Natural	SDT	173,800	16.3	PL 91-331
Manganese, Chemical Grade Type A	SDT	111,900	7.8	PL 91-322
Manganese, Chemical Grade Type B	SDT	65,800	3.3	PL 91-323
Molybdenum	LB	3,500,000	6.1	PL 91-333
Shellac	LB	4,300,000	1.8	PL 91-324
Tungsten	LB	100,000,000	<u>281.5</u>	PL 91-325
Total			\$505.3	

¹ Enacted July 10, 1970.

Legislation Deferred

Material	Unit	Quantity	Market Value (\$ Millions)
Mercury	FL	73,600	<u>\$ 31.3</u>

Legislation Pending

Material	Unit	Quantity	Market Value (\$ Millions)	Number	Legislation Pending Date Proposed
Antimony ¹	ST	6,000	\$ 12.5		7-2-70
Celestite ¹	ST	12,270	0.4		7-2-70
Chromite, Chemical Grade ¹	SDT	350,000	5.1		7-2-70
Chromite, Metallurgical Grade ¹	SDT	1,300,000	163.8		7-2-70
Columbium ¹	LB	4,700,000	8.2		7-2-70
Cordage Fibers, Abaca ¹ ...	LB	25,000,000	4.6		7-2-70
Cordage Fibers, Sisal ¹ ...	LB	100,000,000	8.7		7-2-70
Diamonds, Industrial Bort	KT	17,900,000	40.3	(HR 16293 (S 3086	1-15-69
Diamonds, Industrial Stones	KT	4,950,000	69.9	(HR 16294 (S 3450	2-2-70
Kyanite-Mullite ¹	SDT	4,820	0.5		7-2-70
Lead	ST	498,000	164.2	(HR 15834 (S 3447	2-2-70
Magnesium ¹	ST	78,000	56.2		7-2-70
Rare Earths ¹	SDT	8,200	3.0		7-2-70
Selenium ¹	LB	475,000	3.8		7-2-70
Vanadium ¹	ST	1,200	7.3		7-2-70
Zinc	ST	515,200	159.7	(HR 15840 (S 3455	2-2-70
Total			\$708.2		

¹These proposals were submitted in July 1970. They were in final stages of executive branch clearance on June 30, 1970.

NOTES ON STRATEGIC AND CRITICAL MATERIALS DISPOSAL ACTIVITIES JANUARY-JUNE 1970

Aluminum

Demand for excess stockpile aluminum under the November 1965 long term purchase agreements declined with disposals amounting to 18,672 short tons, valued at \$10.5 million. This was a decrease below sales of 44,665 short tons, valued at \$24.4 million in the July-December period. Cumulative sales since the inception of the sales program, developed with primary producers of aluminum, total 616,941 short tons, valued at \$312.7 million, leaving 831,542 short tons to be sold pursuant to contracts with major producers.

Cobalt

Disposals of cobalt amounted to 2,350,330 pounds, valued at \$5.2 million. These sales virtually exhausted the Defense Production Act excess, leaving 15,399 pounds available for sale from that inventory. Cumulative sales since the inception in August 1966 of the Defense Production Act inventory disposal program amount to approximately 23.8 million pounds with a return of \$44.0 million to the Government. On July 10, 1970, the President signed a disposal bill (PL 91-317) authorizing the release of 40.2 million pounds of excess cobalt, valued at \$88.4 million, from the National and Supplemental Stockpiles.

Lead

Sales of lead during the period totaled 5,427 short tons, valued at \$1.5

million. This was a decrease from the 22,738 short tons, valued at \$7.7 million, sold during the previous 6 months. The major reason for the heavy sale of lead in the July-December period was the availability of 15,000 short tons of antimonial lead which was in extreme short supply due to a shortage of antimony. All antimonial lead was sold during that period. At the end of the report period, closed discussions were still underway with producers of primary lead and zinc on the development of a long-range disposal program covering the entire excess quantities of both commodities.

Magnesium

The continuing strong demand situation resulted in the sale of 11,296 short tons, valued at \$7.2 million. Excess magnesium sales helped ease a continuing shortage in the market. The President signed, on July 10, 1970, a magnesium disposal bill (PL 91-321) authorizing release of 12,000 short tons, valued at \$8.8 million, from the National Stockpile.

With the stockpile objective eliminated for this material on March 4, 1970, an additional disposal proposal was proposed to the Congress on July 2, 1970. This would authorize disposal of 78,000 tons of magnesium and thus eliminate all magnesium from the stockpile inventory. Industry agrees with the present program and has supported disposal legislation.

Rubber

On May 19, 1970, GSA reentered the rubber market after an absence of 15 months. Sales were terminated in February 1969 because of an increase in the stockpile objective. On March 4, 1970, the OEP Director approved a new stockpile objective for rubber. This revised objective left an excess of 169,000 long tons of rubber which had previously been authorized for disposal under separate Congressional actions in 1960 and 1965. After extensive consultations with affected elements of the industry and international producer countries, a program was developed calling for the Government to offer for sale 7,000 long tons per month of excess rubber, with sales on a negotiated basis for domestic consumption only. As of June 30, disposals amounted to 14,000 tons, with proceeds of \$6.6 million.

Silver

Sales of Treasury silver (not included in stockpile inventories) totaled 34.6 million fine troy ounces, valued at \$61.3 million. The amount of revenue returned to the Treasury over and above the monetary value totaled \$16.6 million. The stockpile objective for silver was reviewed and on March 4, 1970, reduced from 165 million fine troy ounces to 139.5 million ounces. The Treasury indicated a need for the 25.5 million ounces excess that resulted. It plans to use the returned silver to mint Eisenhower silver dollar commemorative coins. Legislation which would permit the return of this silver to the Treasury was pending at the end of the report

period. This legislation would the General Services Administ unissued Carson City silver de lector's items. If this legislatio it is expected that the coll dollars would be offered for time in fiscal year 1971.

Tin

Although there were no disposals of tin, sales were n the Agency for International foreign assistance program. Th totaled 1,290 long tons, valued lion. At the end of the re consultations were underway to reopening of commercial sale tin which had been suspende than 2 years. If consultations modest commercial sales of made without disruption, such be resumed during fiscal year

Tungsten

Tungsten disposals totaled pounds, valued at \$12.2 millic considerably below the level experienced in July-December lion pounds, valued at \$70.6 strong demand for tungsten p sulted from a general worldw of tungsten. Sales in the lat the report period were restric mestic consumption, but with of the tungsten disposal bill July 10, 1970), covering 1 pounds of excess stockpile tu expected that the tungsten p be revised to provide some re

eign markets as well as assuring supply to domestic markets. On March 4, 1970, the tungsten stockpile objective was increased approximately 15 million pounds, thus, the total quantity available for disposal was reduced by a like quantity.

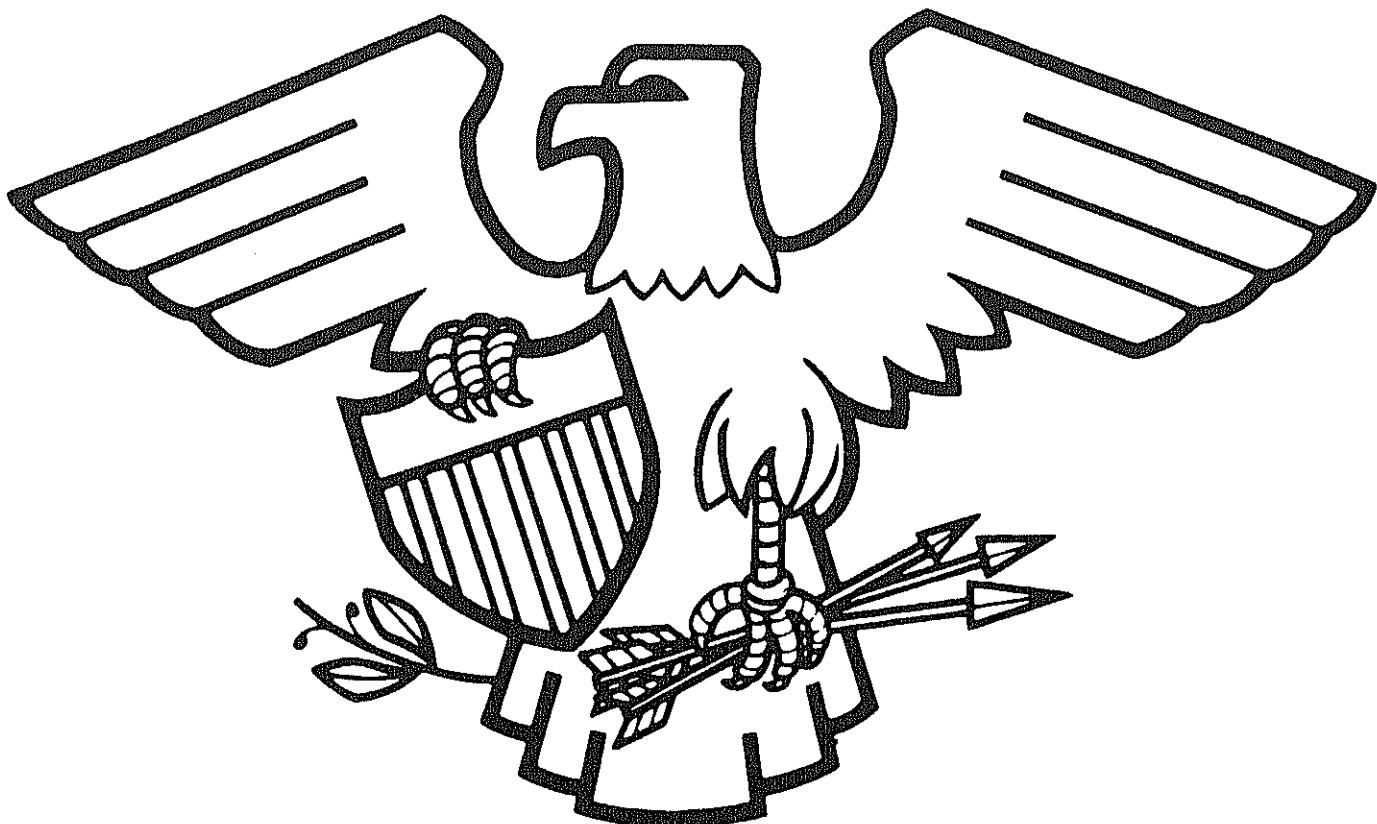
Vanadium

Disposal of vanadium during the report period amounted to 1,604 short tons, valued at \$9.3 million. On March 4,

1970, the vanadium stockpile objective was reduced and legislation to permit the disposal of 1,200 short tons, valued at \$7.3 million, was submitted to the Congress on July 2, 1970. GSA sales of vanadium during the latter part of the report period were heavily oversubscribed and the terms and conditions of the program considerably tightened in order to spread out the limited availability and, thus, better meet market needs.



GOVERNMENT ACTIVITIES



General Services Administration
Department of Commerce
Department of State
Department of Agriculture
Department of Interior
Bureau of Mines
U. S. Geological Survey

ACTIVITIES OF THE GENERAL SERVICES ADMINISTRATION RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The General Services Administration is charged with the general operating responsibility, under policies set forth by the Office of Emergency Preparedness, for stockpile management, including (1) purchasing and making commitments to purchase, transferring, rotating, upgrading, and processing of metals, minerals, and other materials; (2) expansion of productive capacity through the installation of additional equipment in Government-owned plants and the installation of Government-owned equipment in privately-owned facilities; (3) storage and maintenance of all strategic materials held in Government inventories; and (4) disposal of excess stockpile mate-

rials, including the development of disposal plans, selling the materials and providing for Government use of such materials.

The activities of the General Services Administration, particularly in connection with procurement, upgrading, and disposals, have been summarized in the earlier sections of this report.

STORAGE AND MAINTENANCE

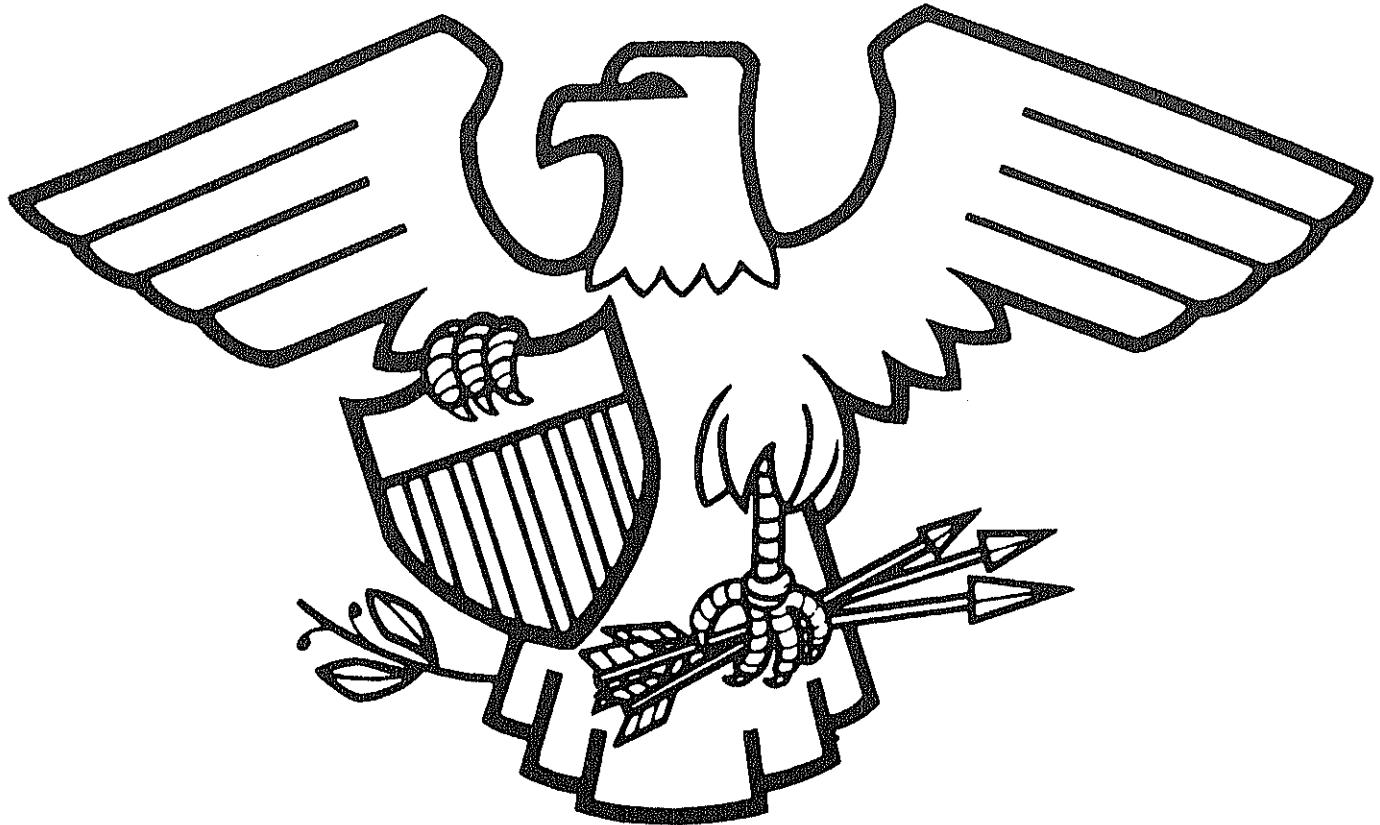
On June 30, 1970, there were 45.8 million tons of strategic materials stored at 136 locations as follows:

	As of June 30, 1970	Change in last 6 months
Military depots	35	
GSA depots	30	
Other Government-owned sites	18	
Leased commercial sites	12	
Industrial plantsites	39	
Commercial warehouses	<u>2</u>	<u>-1</u>
Total	136	-1

One commercial warehouse in Lowell, Massachusetts, was evacuated of stockpile

materials during the period.

GOVERNMENT ACTIVITIES



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Department of State
Department of Agriculture
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ACTIVITIES OF THE DEPARTMENT OF COMMERCE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

RESPONSIBILITIES

The Department of Commerce has been delegated a number of responsibilities with regard to the National Stockpile, and these in turn have been assigned to the Business and Defense Services Administration within the Department. BDSA prepares for the Office of Emergency Preparedness estimates of essential civilian and war-supporting requirements for strategic materials in a mobilization period, a basic element in determining stockpile objectives. In certain limited cases, it also prepares estimates of the mobilization supply of such materials. It reviews plans for disposal of surplus stockpile materials and it provides OEP or GSA with its evaluation of the market impact of proposed schedules of sales. In addition, it develops recommendations in the matter of purchase specifications, special instructions, and storage procedures. It also prepares special studies for OEP regarding strategic material problems and in general submits to OEP on behalf of the Department recommendations or advice on stockpile policies and programs.

ESSENTIAL CIVILIAN AND WAR-SUPPORTING REQUIREMENTS

During January-June 1970, mobilization requirement reviews were sent to OEP for five stockpile items: *abaca*, *amosite asbestos*, *chrysotile asbestos*, *sisal*, and *sperm oil*. Three of these reviews included an estimate of the mobilization supply

(*abaca*, *sisal*, and *sperm oil*). As of June 30, 1970, BDSA had completed requirements estimates for 66 of the stockpile items originally scheduled for review by OEP.

DISPOSAL PROGRAMS

During the report period, BDSA submitted 15 disposal recommendations to GSA in connection with proposed legislation seeking Congressional approval to dispose of items excess to stockpile objectives.

PURCHASE SPECIFICATIONS AND SPECIAL INSTRUCTIONS

Five revised purchase specifications were submitted to OEP for approval. The revisions were prompted by changes in current commercial practice which now require higher physical and chemical standards for the five materials. Improved provisions for packaging, marking, and testing were also included in the specifications. Four special instructions were submitted to OEP to provide GSA with guidance on crediting, record keeping, and disposal planning.

STORAGE INSTRUCTIONS

BDSA made recommendations on 14 storage instructions for stockpile items, most of which were based on consultation with consumers or producers of the materials.

ACTIVITIES OF THE DEPARTMENT OF STATE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The Department of State provides guidance regarding the effects of stockpiling program activities on United States foreign relations and deals with problems which may arise out of these activities.

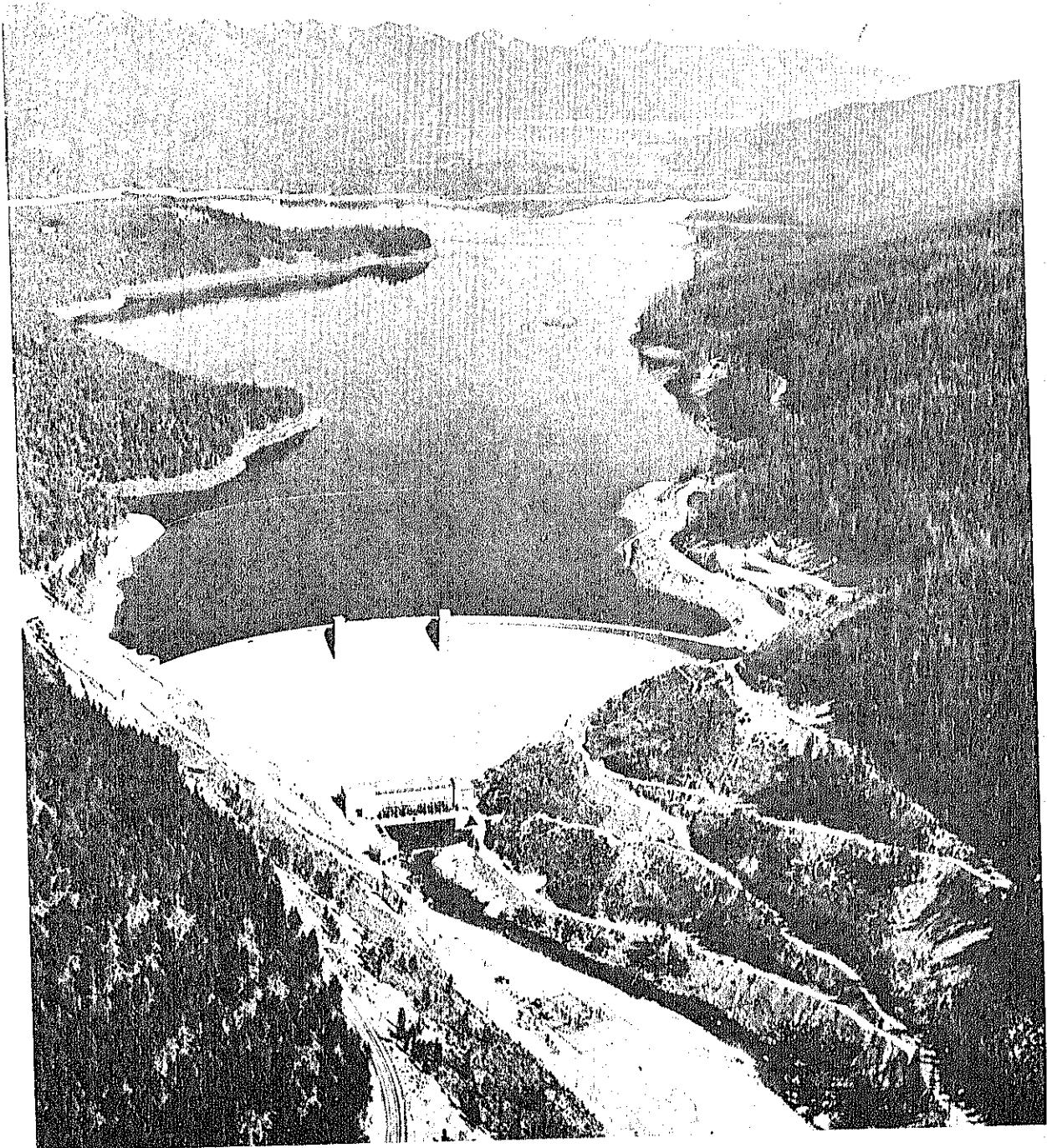
The Department participates with other agencies in the periodic review of the supply and demand situation for each of the stockpiled materials and in the development of related stockpile objectives. It also provides estimates of political and economic reliability of foreign sources of supply in time of national emergency.

In regard to the disposal of surplus materials from the stockpile, the Department shares in the development of disposal plans and conducts appropriate consultations with interested foreign govern-

ments about each plan. Based on these consultations, an evaluation is made of the political and economic effects of disposals on friendly foreign countries and on foreign relations of the United States. Recommendations are made for the adoption or modification, as necessary, of the proposed disposal plans.

During January-June 1970, the Department conducted numerous consultations with foreign governments concerning new disposal plans and modification of existing programs. In addition, it responded to representations made by foreign governments concerning the effects of disposal programs and revisions of stockpile objectives on their economy and trade.





Hungry Horse Dam Project provides needed electrical power and conserves water resources. The power plant houses four generator units with a combined power of 285,000 kw, and is made of a number of strategic and critical materials.

ACTIVITIES OF THE DEPARTMENT OF AGRICULTURE RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

BARTER ACTIVITIES

No barter contracts were signed for strategic materials for subsequent transfer to the Supplemental Stockpile during January-June 1970. The only strategic material remaining to be delivered to the Commodity Credit Corporation for subsequent transfer to the stockpile under existing contracts is diamond dies. During the report period, diamond dies valued at \$67,000 were delivered to CCC. This brings the cumulative total of strategic materials delivered to CCC since 1950 to approximately \$1.6 billion. Of this total, through June 30, 1970, \$223.3 million in strategic materials have been transferred to the National Stockpile and about \$1.4 billion to the Supplemental Stockpile.

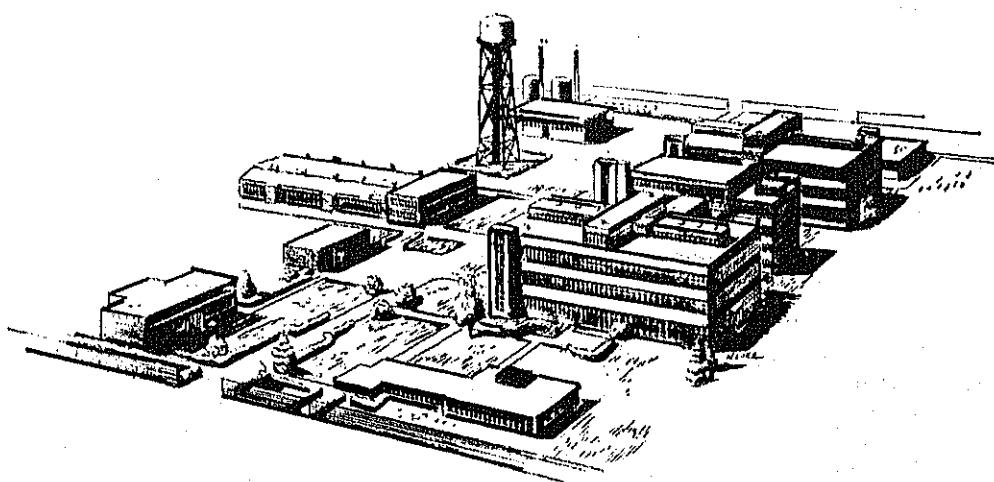
EXPANSION OF DOMESTIC SOURCES OF SUPPLY

Eight lots of *Atropa belladonna*, nine lots of *Digitalis lanata*, two lots of *Digi-*

talis purpurea, and eight elite lines of *Papaver somniferum* continue to be maintained in storage at the National Seed Storage Laboratory, Fort Collins, Colorado. The seed stocks are considered sufficient to meet the minimum national production needs in the event of an emergency. Stocks are rejuvenated periodically when they reach a critical stage of low viability.

PROTECTION OF STOCKPILE ITEMS

The Forest Products Laboratory has developed a method of eliminating glue skips in corrugated fiberboard containers, which are the most widely used containers for shipping and storing merchandise and agricultural products. It has also developed a new cantilever beam test for evaluating water-resistance of corrugating adhesives used in fiberboard containers.



ACTIVITIES OF THE DEPARTMENT OF THE INTERIOR RELATING TO STOCKPILING OF STRATEGIC AND CRITICAL MATERIALS

The Department of the Interior is responsible for the management, conservation, and development of the Nation's natural resources to meet the requirements of national security and an expanding economy. The Department provides advice and assistance to the Office of Emergency Preparedness in formulating and carrying out programs for the stockpiling of strategic and critical materials. The Department of the Interior conducts research in exploration, mining, beneficiation, and metallurgy and compiles information on production and consumption for use in stockpile planning.

The Department conducts supply requirements studies when market conditions or other circumstances indicate problem areas in which materials are likely to be in short supply and recommends appropriate action to overcome deficiencies. The Department also administers programs to encourage the exploration, development, and mining of minerals and metals for emergency purposes.

RUTILE EXPANSION PROGRAM

Under terms of a contract between the Office of Minerals and Solid Fuels and the Battelle Memorial Institute, the Bureau of Mines arranged for the end-use testing of rutile concentrate for the production of titanium metal, welding rods, ceramics and glass fibers. A final report is currently being prepared. The Bureau of Mines also continued to maintain surveillance of industry activities on developing processes for producing rutile substitutes.

Metallurgical research activities by the Bureau of Mines ranged from mineral dressing studies to extract rutile as a byproduct at sand and gravel plants to studies on removal of iron from ilmenite to produce rutile, either by precipitation or as a residue.

The Bureau of Mines continued research to recover commercial grades of rutile and other heavy minerals from phosphate tailings in the central Florida pebble phosphate district. The Bureau also sought ways to recover titanium from the red mud wastes generated at alumina plants in Arkansas.

A report has been undertaken on all sources of information on the titanium resources of the world, which should be useful in evaluating the present, mid-term, and long-term supply of titanium.

RESEARCH AND RESOURCE DEVELOPMENT ACTIVITIES

The Bureau of Mines mining and metallurgical research and mineral resource development programs contribute extensively to improved technology for recovering strategic and critical minerals. Recent emphasis has been on recycling of materials by improving scrap treatment processes. Studies on titanium traced the flow of scrap material from the generated sources to reuse in order to delineate the potential supply from secondary sources. Another area of progress has been in techniques to recover byproduct strategic minerals - such as fluorine from phosphate

rock and bismuth, silver, gold, aluminum, lead, and other metals from copper ores. The resource development effort has turned toward major field investigations to assess the domestic availability of copper and lead. Results of similar investigations on molybdenum and chromium have been published and a tungsten report is being printed.

Production has begun at a second lead-zinc-silver mine in the East Tintic mining district, Utah. The new development opens up a potentially productive zone about 2 miles long by 1 mile wide that was not considered to have merit prior to geologic studies by the Geological Survey.

Geochemical studies by the Survey have shown that a chromite layer of considerable extent in the Stillwater complex in southwest Montana contains significant amounts of platinum—possibly enough to make this previously known but economically submarginal chromite resource profitable to mine.

In another part of the Stillwater complex studied previously by the survey, a mining company has announced plans to develop an open pit copper-nickel mine.

Present and future dependence on foreign supply sources to meet domestic demand for minerals is illustrated on the following page. Foreign requirements in 1968 and estimated requirements by the year 2000 are shown in millions of dollars for selected commodities. Materials are imported from virtually every country, and the amounts imported are expected to increase as domestic demand grows. The economics of domestic production from low grade or hitherto undeveloped deposits, the ability to stimulate recycling of materials, and the problem of balance of payments with respect to imports are questions which must be resolved.

Special and technical reports, issued during January-June 1970, having a relationship to strategic and critical materials are as follows:

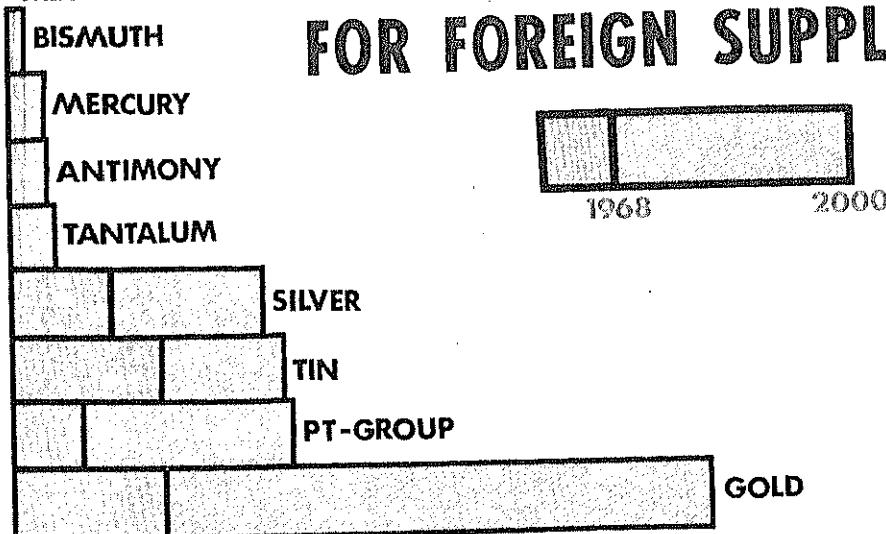
BUREAU OF MINES

Reports of Investigations

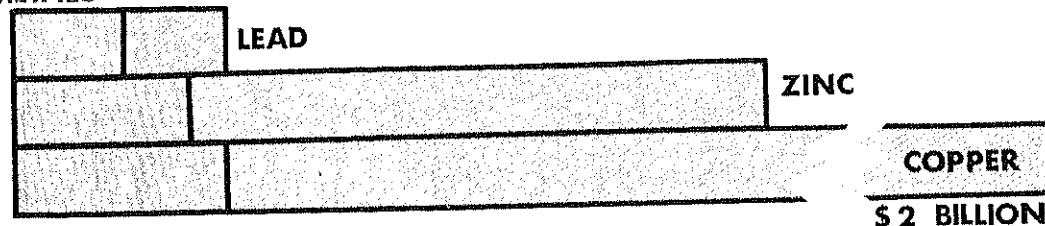
- | | |
|------|--|
| 7330 | Mine Roof Vibrations from Underground Blasts. |
| 7331 | Comparison of the Triangular, Polygonal, and a Statistical Method of Computing Grade and Tonnage of Ore for the Silver Bell Oxide Porphyry Copper Deposit. |
| 7336 | Solvent Extraction of Nickel and Zinc from a Waste Phosphate Solution. |
| 7339 | Oxidation Roasting of Chalcocite Concentrate. |
| 7344 | Electrolytic Preparation of Tungsten Metal and Tungsten Carbide from Wolframite. |
| 7347 | Selection of Anode Materials and Operating Conditions for Electrowinning Beryllium. |

GROWING NEED FOR FOREIGN SUPPLIES

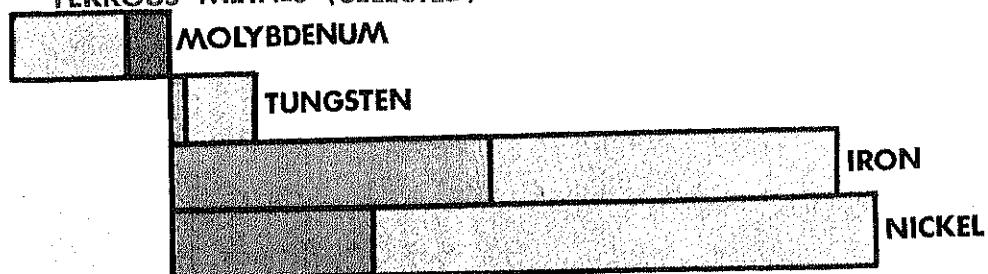
HEAVY METALS



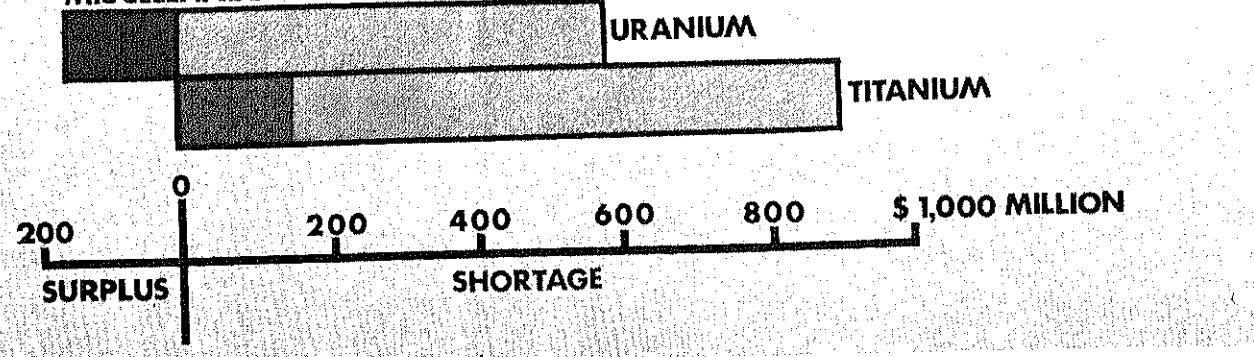
BASE METALS



FERROUS METALS (SELECTED)



MISCELLANEOUS



Based on data from
U. S. Bureau of Mines

- 7348 Use of Cement Copper in an Iron-Copper-Carbon Powder Metallurgy Alloy.
- 7353 Electrowinning Aluminum from Aluminum Chloride: Operation of a Single-Compartment Cell.
- 7360 Recovery of Lead and Sulfur from Galena Concentrate Using a Ferric Sulfate Leach.
- 7362 Removal of Magnesium Impurities from Phosphate Rock Concentrates.
- 7363 Influence of Rolling Temperature and Copper Content on Creep and Other Properties of Zinc-Copper and Zinc-Titanium-Copper Alloys.
- 7370 Anode Materials for Alumina Reduction: Evaluation of Lignite as a Carbon Source.
- 7371 Reaction of Co-Ni-V Alloys with O₂ at 1,351° to 1,429°K.
- 7372 Surface Tension and Density of Liquid Tin.
- 7375 Leach-Precipitation-Flotation Studies on Red Bed Copper Ore Using Controlled Atmosphere.
- 7376 Beneficiation of Georgia Kyanite Ore.
- 7385 Evaluation of Electrowon Tungsten Sheet.
- 7388 Columbium Alloy Development with Boron, Hafnium, and Tungsten.
- 7391 Fracturing Hard Rock with Nuclear Explosives and Extraction of Ore by a modified Block-Caving Method.
- 7393 Development of High-Temperature Vanadium-Base Alloy.
- 7398 Electrowinning Misch Metal from a Treated Bastnasite Concentrate.
- 7402 Electrochemical Recovery of High-Purity Nickel and Cobalt from Crude Nickel and Ferronickel.
- 7404 Factors Related to Mineral Separation in a Vacuum.
- 7411 Magnetic Roasting and Leaching for Upgrading Minnesota Manganiferous Iron Ores.
- 7417 Geochemical Investigations for Gold, Antimony, and Silver at Stibnite, Idaho.

Information Circulars

- 8439 Bismuth in the United States.
- 8445 Impact of Technology on the Commercial Secondary Aluminum Industry.
- 8446 Demand and Supply of Molybdenum in the United States.
- 8450 A Review of Proposed Processes for Making Rutile Substitutes.
- 8457 Mineral Materials for Chemical Manufacturing. A Survey of Supply and Demand by the Chemical Industry in the Ohio River Basin of Ohio, Pennsylvania, and West Virginia.
- 8460 Bureau of Mines Research and Accomplishments in Utilization of Solid Wastes.
- 8464 Silver Potential and Economic Aspects of the Leadville District, Lake County, Colorado.

GEOLOGICAL SURVEY

Professional Papers

- 313-E Mineral Resources in Permian Rocks of Southwest Montana, by R. W. Swanson (fluorspar).
- 535 Geology and Ore Deposits of the Eureka and Adjoining Districts, San Juan Mountains, Colorado, by Wilbur S. Burbank and Robert G. Luedke (gold, silver, copper, lead, zinc).
- 588 Geology and Ore Deposits of the Picher Field, Oklahoma and Kansas, by E. T. McKnight and R. P. Fischer (zinc, lead).
- 626 Geology and Mineral Deposits of the Poncha Springs NE Quadrangle, Chaffee County, Colorado, by R. E. Van Alstine, with a section on Fluorspar mines and prospects, by R. E. Van Alstine and D. C. Cox.
- 641-A Physiographic, Stratigraphic, and Structural Development of the Quadrilatero Ferrifero, Minas Gerais, Brazil, by J. V. N. Dorr 2d (iron, manganese, gold).
- 650-A, D Geological Survey Research 1969, Chapters A and D. Short papers on economic geology, analytical methods, and related subjects.
- 700-B Geological Survey Research 1970, Chapter B. Short papers on economic geology, analytical methods, and related subjects.

Bulletins

- 1261-G Mineral Resources of the Emigrant Basin Primitive Area, California, by E. W. Tooker and H. T. Morris, U. S. Geological Survey, and Paul V. Fillo, U. S. Bureau of Mines (tungsten).
- 1287 Geology and Ore Deposits of the Central York Mountains, Western Seward Peninsula, Alaska, by C. L. Sainsbury (tin, beryllium).
- 1312-A Structural Control of Geochemical Anomalies in the Greaterville Mining District, Southeast of Tucson, Arizona, by Harald Drewes (gold, silver, mercury, copper, lead).
- 1312-C A Geochemical Study of Alluvium-covered Copper Deposits in Pima County, Arizona, by L. C. Huff, with a section on Analytical methods, by A. P. Marranzino and H. M. Nakagawa.
- 1312-D Lead-Zinc-Silver Deposits Related to the White Mountain Plutonic Series in New Hampshire and Maine, by D. P. Cox.
- 1312-F Rutile and Ilmenite Placer Deposits, Roseland District, Nelson and Amherst Counties, Virginia, by Norman Herz, L. E. Valentine, and E. R. Iberall.
- 1312-N Some Rare-element Mineral Deposits in Mainland China, by K. Y. Lee (rare earths, fluorspar, thorium, beryl, columbium, tin).
- 1316 Bibliography On the Geology and Resources of Vanadium to 1968, by R. P. Fischer and J. P. Ohl.

EXPENDITURES OF STOCKPILE FUNDS, BY TYPE
 (for the National Stockpile)

Cumulative and for Last Half Fiscal Year 1970

Type of Expenditures	Cumulative Through December 31, 1969	Six Months Ended June 30, 1970	Cumulative Through June 30, 1970
Expenditures			
Gross Total	\$6,512,027,279	\$7,532,623	\$6,519,559,902
Less: Receipts from Rotation Sales and Reimbursements	545,663,064	214,523	545,877,587
Net Total	5,966,364,215	7,318,100	5,973,682,315
Materials Acquisition Costs, Total	5,439,195,441	11,176	5,439,206,617
Stockpile Maintenance Costs, Total	444,691,376	4,413,796	449,105,172
Facility Construction	43,772,457	-	43,772,457
Storage and Handling Costs	298,161,990	4,420,367	302,582,357
Net Rotation Costs	102,756,929	-6,571	102,750,358
Administrative Costs	69,430,735	2,217,177	71,647,912
Operations, Machine Tool Program	13,046,663	675,951	13,722,614

Cumulative figures are the total of expenditures under PL 117, 76th Congress and PL 520, 79th Congress. Expenditures under PL 117 totaled \$70,000,000 of which \$55,625,237 was for materials acquisitions costs and \$14,374,763 was for other costs. Final expenditures under PL 117 were made in FY 1951.

Source: General Services Administration



TOTAL OBLIGATIONS AND EXPENDITURES OF STOCKPILING FUNDS

Under PL 117 and PL 520 for the National Stockpile
Cumulative and by Fiscal Period through June 30, 1970

Fiscal Period	OBLIGATIONS INCURRED ¹		EXPENDITURES ²	
	Net Change by Fiscal Period	Cumulative as of End of Period	By Fiscal Period	Cumulative as of End of Period
Prior to Fiscal Year 1948	\$ 123,871,685	\$ 123,871,685	\$ 66,330,731	\$ 66,330,731
Fiscal Year 1948	252,901,411	376,773,096	82,907,575	149,238,306
Fiscal Year 1949	459,766,881	836,539,977	304,486,177	453,724,483
Fiscal Year 1950	680,427,821	1,516,967,798	440,834,970	894,559,453
Fiscal Year 1951	2,075,317,099	3,592,284,897	655,537,199	1,550,096,652
Fiscal Year 1952	948,117,547	4,540,402,444	844,683,459	2,394,780,111
Fiscal Year 1953	252,375,163	4,792,777,607	906,158,850	3,300,938,961
Fiscal Year 1954	116,586,681	4,909,364,288	644,760,321	3,945,699,282
Fiscal Year 1955	321,799,833	5,231,164,121	801,310,094	4,747,009,376
Fiscal Year, 1956 ³	251,692,667	5,482,856,788	382,011,786 ³	5,129,021,162 ³
Fiscal Year 1957	190,000,109	5,672,856,897	354,576,558	5,483,597,720
Fiscal Year 1958	54,473,250	5,727,330,147	173,753,997	5,657,351,717
Fiscal Year 1959	38,710,879	5,766,041,026	65,260,098	5,722,611,815
Fiscal Year 1960	19,859,290	5,785,900,316	49,227,142	5,771,838,957
Fiscal Year 1961	29,082,919	5,814,983,235	33,325,431	5,805,164,388
Fiscal Year 1962	31,179,407	5,846,162,642	33,695,431	5,838,859,819
Fiscal Year 1963	17,414,900	5,863,577,542	22,104,176	5,860,963,995
Fiscal Year 1964	15,489,597	5,879,067,139	16,091,067	5,877,055,062
Fiscal Year 1965	16,288,732	5,895,355,871	16,561,275	5,893,616,337
Fiscal Year 1966	16,296,070	5,911,651,941	16,468,100	5,910,084,437
Fiscal Year 1967	18,197,410	5,929,849,351	17,981,675	5,928,066,112
Fiscal Year 1968	16,008,237	5,945,857,588	15,902,213	5,943,968,325
Fiscal Year 1969	15,451,611	5,961,309,199	15,914,729	5,959,883,054
Fiscal Year 1970	14,795,005	5,976,104,204	13,799,261	5,973,682,315

¹Figures are the sum of obligations incurred under PL 520, 79th Congress and PL 117, 76th Congress. Final obligations under PL 117, 76th Congress were incurred in Fiscal Year 1949.

²Figures are the sum of expenditures under PL 520, 79th Congress and PL 117, 76th Congress. Final expenditures under PL 117, 76th Congress were made in Fiscal Year 1951.

³1956 and subsequent fiscal periods and cumulative expenditures are reported on an accrual basis.

Source: General Services Administration

